
Course Prefix/No.: RAD 115
Course Title: RADIOGRAPHIC IMAGING II
Lecture Hours: 2.0
Lab Hours: 3.0
Credit Hours/Sem.: 3.0

[Distance Learning Attendance/VA Statement](#)
[Textbook Information](#)

COURSE DESCRIPTION

This course continues a detailed study of primary and secondary influencing factors and accessory equipment related to imaging.

COURSE COMPETENCIES

Module I: Radiographic Density

- Analyze radiographic quality.
- Differentiate the meaning of sharpness of detail versus visibility of detail.
- Differentiate between photographic and geometric properties and which factors regulate each.
- Examine radiographic density.
- Distinguish between the factors which control and influence radiographic image density and discuss how they affect it.
- Calculate technical factors using mAs Law formula.
- Calculate technical factors using Intensification factor formula.
- Calculate technical factors using the 15% KVP rule.

Module II: Radiographic Contrast

- Relate radiographic contrast to subject and film contrast.
- Distinguish the factors which control and influence radiographic contrast and discuss how they affect it.
- Describe the different devices/methods of beam restriction and discuss how each affects image contrast.
- Evaluate the different types/ratios of grids and discuss how each affects image contrast.
- Assess the different speeds of screens and how each affects image contrast.

Module III: Recorded Detail and Distortion

- Evaluate image definition.
- Classify causes of motion and their effects on image unsharpness and discuss methods of eliminating motion.
- Explain what is meant by material unsharpness and describe the effects that different types of radiographic film and intensifying screens have on image sharpness/unsharpness.
- Dissect modulation transfer function.

- Examine the conditions that cause quantum mottle and explain how it might be prevented.
- Analyze what is meant by geometric unsharpness and describe the effects that different focal spot sizes, object-film distances and focal spot-film distances have on image sharpness/unsharpness.
- Distinguish between penumbra and umbra.
- Differentiate size and shape distortion.
- Categorize the factors which control and influence size distortion and discuss how they affect it.
- Categorize the factors which control and influence shape distortion and discuss how they affect it.
- Calculate factors using the magnification factor and % magnification formulas.
- Evaluate radiographic quality
- Outline and define proper oral communication skills to include presentation preparation and delivery.

Module IV: Technical Factor Selection

- Describe and discuss automatic exposure control.
- Describe and discuss the necessary information that should be included on a technique chart.
- Classify the information that is not considered in the technique chart that would require technical adjustment.
- Determine why age, size, and pathology of the patient must be considered when selecting technical factors.
- Determine how standard radiographic positions affect exposure and why the technique should be adjusted for each.
- Relate two types of technique charts commonly implemented and define the advantages and disadvantages of using each.
- Analyze how the use of contrast media (positive and negative) influences the selection of technical factors.
- Differentiate technique selection systems

Module V: Automatic Exposure Control

- Differentiate between the two types of Automatic Exposure Control units: photo-timer type and ionization chamber type.
- Analyze the different components of each type of AEC unit and identify their location in relation to the bucky device.
- Identify and describe the influencing factors of Automatic Exposure Control.
- Explain the use of AEC density settings and how they affect image receptor exposure and image quality.
- Evaluate how AEC eliminates the need to set an exposure time.
- Relate how the manual selection of milliamperage (mA), kilovoltage (kVp), and source to image receptor distance (SID) can affect AEC.
- Analyze how AEC provides appropriate density to the finished radiograph.
- Evaluate the issues that a technologist may need to troubleshoot when using AEC.
- Explain minimum response time.
- Specify why a backup timer provides the ability to control patient exposure.
- Define anatomically programmed radiography.

ACADEMIC INTEGRITY

The policies stated in the YTC Student Catalog and the Radiologic Technology Student Manual will be enforced. Any student violating the policies will be subject to academic discipline as stated.

COURSE REQUIREMENTS

All students are responsible for attaining competencies through the completion of the following course requirements:

- Attending class
- Reading assigned materials
- Participating in class, CAI and laboratory activities
- Class presentations

PERFORMANCE OBJECTIVES/MINIMAL STANDARDS

Performance objectives for each instructional unit are included in this syllabus. A minimum grade of 80% is required to pass the course (See Grading Procedures).

GRADING PROCEDURES

Unit tests and some subunit tests will be given. A minimum grade of 80% is required on all unit tests. Any student who fails a unit test will be required to take a comprehensive final exam at the end of the semester. The final exam will count 1/3 of the final grade.

- Unit tests = 66% of the final grade
- Projects/Presentations will be averaged together at the end of the semester and will count as one unit test.
- Final exam = 33% of the final grade as required

The following grading scale applies:

GRADE	SCORE
A	93-100
B	86-92
C	80-85
D	70-79
F	BELOW 70

METHODS OF INSTRUCTION

Principles will be introduced by the instructor through lecture and demonstration. Additional methods include CAI (computer-assisted instruction), laboratory experience and peer teaching/learning through presentation preparation and delivery. Additional methods designed for remediation or enrichment will be individually tailored as needed.

ATTENDANCE POLICY

The attendance policy as stated in the YTC Student Catalog and Radiologic Technology Student Policy Manual will be enforced.

ENTRY LEVEL SKILLS

A student entering this course must be enrolled in the Radiologic Technology Program as a first-year student.

PREREQUISITES

RAD 102, RAD 101, RAD 152, RAD 110, RAD 130, RAD 165, RAD 105

CO-REQUISITES

RAD 136, RAD 175

Disabilities Statement: Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.

Revised: 10/2010